Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
Unlicensed Operation in the TV Broadcast Bands Additional Spectrum for Unlicensed Devices Below 900 MHz and in the 3 GHz Band	))))	ET Docket No. 04-186 ET Docket No. 02-380

Comments By
Cohen, Dippell and Everist, P.C.
In The Notice of Proposed Rulemaking

The following comments are submitted on behalf of Cohen, Dippell and Everist, P.C. ("CDE"). CDE or its predecessors located in Washington, D.C. have been providing consulting engineering services to the communications industry for over 60 years.

The Federal Communications Commission ("Commission" or "FCC") in the Notice of Proposed Rulemaking ("NPRM") proposes to permit on a secondary basis certain unlicensed operations in the general frequency range of below 900 MHz and in the 3 Ghz band.

Basically, unlicensed operations would not be permitted in:

- VHF Channels 2-4, and
- UHF Channels 37, 52-69.

The FCC proposes that unlicensed devices would be permitted under certain conditions in:

- VHF Channels 5-13,
- UHF Channels 14-36 and 38-51.

By virtue of the above exclusion, the Commission acknowledges that the potential for interference does exist and therefore it will not permit unlicensed devices to operate in certain frequency ranges. In the Public Notice (DA 04-1844) dated June 24, 2004,[1] the FCC responded to questions regarding the use of unlicensed devices. The Commission provided the following guidance:

> "Under the Communications Act of 1934, as amended, the FCC holds exclusive jurisdiction over the regulation and resolution of RFI issues.[2] Section 301 declares that one of the purposes of the Act is to "maintain the control of the United States over all channels of radio transmission," and Section 303(f) obligates the Commission to make regulations necessary to "prevent interference."[3] In addition, Section 302 has granted the Commission express authority to adopt regulations "governing the interference potential of devices which in their operation are capable of emitting radio frequency energy by radiation... in sufficient degree to cause harmful interference to radio communications."[4] As the Conference Report to the 1982 Amendments to the Act stated, the Act reserves "exclusive jurisdiction to the Federal Communications Commission over matters involving RFI [and provides] that regulation of RFI phenomena shall be imposed only by the Commission."[5] Both the FCC and the federal courts have overturned attempts by third parties to regulate RFI matters in light of the FCC's exclusive authority in this area.[6]
>
> The statute has always contemplated FCC authority over not only RFI issues raised by the operation of FCC licensees, such as radio broadcast stations, but also RFI issues arising from the operation of unlicensed devices. As the Senate Report to the 1968 Amendments to the Act stated, "[t]he Federal Communications Commission

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[1]Commission Staff Clarifies FCC's Role Regarding Radio Interference Matters and its Rules Governing Customer Antennas and Other Unlicensed Equipment.

[2]Communications Act of 1934, 47 U.S.C. Section 1 et. seq. (all citations to the U.S. Code) (Act).

[3]47 U.S.C. Sections 301, 303(f) (2004).

[4]47 U.S.C. Sections 302a(a)(1) (2004).

[5]See H.R. Report No. 765, 97th Cong., 2d Sess. 33 (1982), 1982 U.S.C.C.A.N. 2261, 2277 (1982 Conference Report).

[6]See generally Freeman v. Burlington Broadcasters Inc., 204 F.3d 311, 319-22 (2nd Cir. 2000); Southwestern Bell Wireless Inc. v. Johnson County Board of County Commissioners, 199 F.3d 1185, 1189-93 (10th Cir 1999); see also In the Matter of 960 Radio, Inc., Memorandum Opinion and Declaratory Ruling, FCC 85-578, 1985 WL 193883 (Nov. 4, 1985) ("960 Radio"); In re Petition of Cingular Wireless L.L.C. for a Declaratory Ruling, Memorandum Opinion and Order, 18 F.C.C.R. 13126, DA 03-2196 (rel. July 7, 2003)("Anne Arundel"); In re Mobilecomm of New York Inc., Memorandum Opinion and Declaratory Ruling, 2 FCC Rcd 5519 (CCB 1987) ("Mobilecomm").

> presently has authority under Section 301 of the Communications Act to prohibit the use of equipment or apparatus which causes interference to radio communications and, under 303(f) to prescribe regulations to prevent interference between stations. Pursuant to this authority the Commission has established technical standards applicable to the use of various radiation devices."[7] As one example of RFI involving unlicensed devices, the Report cited interference caused to air-safety-related emergency communications and other frequencies at a California facility by 58 garage door openers, which were then, as well as now, RF devices subject to technical standards set out in Part 15 of our rules.[8] Today, in addition to the unlicensed devices discussed in the legislative history, such as radios, tape recorders, remote control devices, and garage door openers, a great diversity of RF technologies operate on an unlicensed basis under Part 15."

The Commission's rules, for example, recognize the inherent inability of prediction methodology in determining precisely the presence or absence of service and interference. The current methodologies are premised on the basis of administrative convenience to permit the Commission to make determinations in authorizing modified or new service. Section 73.683 of the FCC Rules entitled, "*Field Strength Contours and Presumptive Determination of Field Strength at Individual Locations*" states in part:

> "(a) In the authorization of TV stations, two field strength contours are considered. These are specified as Grade A and Grade B and indicate the approximate extent of coverage over average terrain in the absence of interference from other television stations. Under actual conditions, the true coverage may vary greatly from these estimates because the terrain over any specific path is expected to be different from the average terrain on which the field strength charts were based."

The Commission's proposal in the NPRM does not take into consideration service provided in outlying areas where off-the-air service is rendered. This firm is very familiar with instances where the public is not aware of the reason that their reception is being suddenly impaired by a new

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[7]See S. Rep. No. 1276, 90th Cong., 2d Sess. 1968, 1968 U.S.C.C.A.N. 2486, 2487 (1968 Senate Report); see generally 47 C.F.R Sections 2.901, 2.1033, 15.5 et seq (defining the FCC's equipment certification and RFI requirements)

[8]See 1968 Senate Report at 2488.

device operating in the area. In the majority of cases, the consumer does not seek corrective action and the service is lost without a record that it was provided.

Therefore, the Commission needs to recognize these outlying areas, particularly rural areas, where reliance on TV fringe reception still exists. The Commission should consider how these unlicensed devices could impact the reception of over-the-air television service and develop a plan whereby effective communication to potentially affected areas can be distributed and administered with a minimum expenditure of Commission resources. One possible approach is outlined in the following section.

Protected Contour Limitation

In Paragraph 29 of the NPRM, the FCC proposes to protect television reception from interference from Part 15 devices only within the defined protected contour. While protected contours are commonly used for allocation purposes among television services, viewable signals do not stop at some artificial barrier defined by the FCC curves. In other words, television receivers do not read the FCC Rules. This fact is recognized in OET Bulletin 72 when predicting Longley-Rice coverage for the Satellite Home Viewer Act.

Many translators and cable head ends depend upon signals that are received beyond the protected contour. Also, many individual viewers have devoted significant effort and expense to receive free over-the-air television beyond the protected contour. A mechanism to protect these receivers from interference from Part 15 devices must be included.

If the FCC feels that TV protection under Part 15 should be restricted to areas within protected contours for the sake of pragmatism, then exceptions should be allowed based upon a Longley-Rice prediction model, such as described in OET Bulletin 72, with modifications for digital modulation and actual receive-antenna height. Actual receive-antenna heights are important because translators

and cable head ends commonly use receive-antennas mounted on towers that are higher than the 9 meters presumed in OET Bulletin 72.

These specific exceptions for receive sites beyond the protected contour could be enforced using simple exclusion zones with calculated radii at specific coordinates maintained in the GIS data base to be referenced by fixed/access installers and/or devices. It is reasonable to expect that pro-active "registration" be required of the owners/operators of such receive sites beyond the protected contours. If desired, the size of the resulting exclusion zones could be reduced by incorporating the directionality of an actual or presumed receive-antenna pattern.

Undesired Propagation Model

Paragraph 30 of the NPRM proposes D/U ratios based upon the DTV parameters of 47 CFR §73.623(c). However, the table following Paragraph 30 suggests using F(50,50) field strengths for the first-adjacent undesired signals, whereas the protection methodology of 73.623(c) is founded upon F(50,10) propagation parameters for both co-channel and first-adjacent undesirable signals. This foundation was further reinforced by the Report and Order for Digital Low Power Television, FCC 04-220, released September 30, 2004. If Section 73.623(c) is to be used as the basis and justification of D/U protection ratios for Part 15 devices, the principle of F(50,10) undesired propagation must be maintained.

As a practical matter, where the FCC F(50,10) curves do not exist for distances less than 15 km, a time adjustment factor (6 to 10 dB) can be employed to maintain the time reliability of the desired signal. Longley-Rice based propagation models would not require such an adjustment.

D/U Ratios Must Adapt to Changes

The D/U ratios of Section 73.623(c) are based upon limited experience with early DTV receivers. They do not reflect receiver performance that is known to vary by the level of the desired signal and the presence of multiple undesired signals.

Hopefully, sometime in the next few years, the D/U ratios of Section 73.623(c) will be modified based upon comprehensive lab studies by the FCC of current generation receivers. The proposed Part 15 Rules should be defined so as to automatically reflect any adjustments.

Mobile Device First-Adjacent Protection

Paragraph 30 of the NPRM proposes only co-channel protection requirements for personal/portable devices. Given that mobile devices must be "smart" about co-channel operation, there is very little added complexity to incorporate first-adjacent protection as well. We strongly disagree with the proposition that, "the potential for harmful interference to adjacent channel television operations is sufficiently low that we do not need to impose adjacent channel restrictions on these devices". A television receiver would suffer interference from a first-adjacent nearby mobile device just as readily as from a fixed device that is further away.

10 Meters "Free" Zone

Footnote 50 to Paragraph 31 of the NPRM proposes to ignore undesired signals within 10 meters of a device presuming that this area is under the unlicensed device operator's control. This presumption is not valid for many dense suburban areas, most multiple dwelling units ("MDU's") and well as for public spaces where Part 15 devices would inevitably be used. A 1 meter, or no more than 3 meter, zone is more appropriate and would not present any added difficulty in calculation.

First-Adjacent "Fudge" Factors

Paragraph 31 of the NPRM suggests using the F(90,90) or protected contour field strength values, whichever is higher, within the desired channel's protected contour for protection from first-adjacent channel operation of Part 15 devices. Moreover, F(50,50) values for the desired field strength (analog and DTV?) as well as the undesired field strength are suggested for first-adjacent operation outside the desired channel's protected contour. The foundation for this byzantine "fudge factor" method of providing "additional" protection is not clear. It is also totally unnecessary if the basis and method of the 73.623(c) D/U ratios are simply respected as described elsewhere in these comments.

Conclusion

Operation in the television bands of devices such as those envisioned in the NPRM is feasible provided that the reliability of TV reception developed over many decades is not thoughtlessly and needlessly undone. Unfortunately, many of the specifics presented in the NPRM seem to ignore the very principles of TV protection upon which the NPRM proposals were purportedly founded. We hope that these comments will contribute to rules and procedures that facilitate new services while fairly preserving existing television services.

Respectfully Submitted,

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November 30, 2004